



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/637,520	08/10/2000	Thomas Michael Walley	10001892-1	7579

57299 7590 02/06/2007
AVAGO TECHNOLOGIES, LTD.
P.O. BOX 1920
DENVER, CO 80201-1920

EXAMINER

PERUNGAVOOR, SATHYANARAYA V

ART UNIT	PAPER NUMBER
----------	--------------

2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/637,520	Applicant(s) WALLEY ET AL.	
	Examiner Sath V. Perungavoor	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-18 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-18 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/15/06</u> . | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

[1] A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on December 15, 2006 has been entered.

Response to Arguments/Amendments

[2] Presented arguments have been fully considered, but are rendered moot in view of the new ground(s) of rejection necessitated by amendment(s) initiated by the applicant(s).

Claim Objections

[3] Claim 1 is objected to because of the following informalities:

There is some ambiguity in the following limitation, “a navigation engine, coupled to the navigation array, the navigation engine configured for controlling **when the navigation array captures navigation images and further configured for receiving the navigation images**”.

Examiner assumes the applicant intended, “a navigation engine, coupled to the navigation array, the navigation engine configured for controlling when the ~~navigation~~ imaging array captures ~~navigation~~ sub-images”. Appropriate correction is required.

Claim Rejections - 35 USC § 103

Art Unit: 2624

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[4] Claims 1, 3-7, 9-15, 17-18 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borza [US 6,333,989] in view of Bohn et al. ("Bohn") [US 6,207,945].

Regarding claim 1, Borza discloses the following claim limitations:

A fingerprint imager [fig. 3a] for capturing an image of a fingerprint comprising: a single sensor integrated circuit (i.e. single chip) having an imaging array (i.e. 100) having a plurality of sensors arranged along an x-axis (i.e. horizontal) [fig. 3a] for capturing a sub-image (i.e. partial images) of the fingerprint at one time [col. 7, ll. 1-5]; wherein the fingerprint is moved with respect to the imaging array (i.e. 100) in a direction that is generally perpendicular to the x-axis (i.e. horizontal) [col. 3, ll. 54-61]; and a mechanism for determining a change in the position (i.e. movement) of the fingerprint with respect to time and controlling the image capture of the imaging array [col. 4, ll. 5-13] that includes a navigation array (i.e. 101) having a plurality of sensors for capturing navigation images of a portion of the fingerprint as the fingerprint moves with respect to the navigation array (i.e. 101) [fig. 3a; col. 6, ll. 40-44]; and a navigation engine (i.e. 16), coupled to the navigation array (i.e. 101), the navigation engine configured for controlling when the navigation array captures navigation images [col. 6, l. 64-col. 7, l. 9] and further configured for receiving the

navigation images and based thereon for determining if a sufficient movement of the fingerprint occurs relative to a predetermined y unit value (*i.e.* Δd), wherein the y-axis is generally perpendicular to the x-axis [*col. 4, ll. 5-13*].

Borza does not explicitly disclose the following claim limitations (emphasis added):

Determining a delta x, which is then compared to a predetermined x unit value for determining the amount of movement of a fingerprint generally along the x-axis and determining a delta y, which is then compared to a predetermined y unit value for determining the amount of movement of a fingerprint along a y-axis that is generally perpendicular to the x-axis.

However, in the same field of endeavor Bohn discloses the deficient claim limitations, as follows:

Determining a delta x (*i.e.* position difference of the distinct features in x-axis), which is then compared to a predetermined x unit value (*i.e.* predetermined distance) for determining the amount of movement of a fingerprint generally along the x-axis and determining a delta y (*i.e.* position difference of the distinct features in y-axis), which is then compared to a predetermined y unit value (*i.e.* predetermined distance) for determining the amount of movement of a fingerprint along a y-axis that is generally perpendicular to the x-axis [*col. 12, ll. 18-32; col. 13, ll. 35-50*].

Borza and Bohn are combinable because they are from the same field of image reconstruction from sub-images.

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Borza with Bohn to determine delta x and y, the motivation being to determine skew in random direction [*col. 6, ll. 28-33*].

Regarding claim 3, Borza and Bohn do not disclose that the predetermined x unit value is equal to one pixel. At the time of the invention, it would have been obvious (as a matter of *design choice*) to a person of ordinary skill in the art to set the predetermined x unit value to one pixel, since this would be finest accuracy possible for tracking. Applicant(s) has not disclosed that the feature of “predetermined x unit value is equal to one pixel”, is intended for any specific purpose.

Regarding claim 4, Borza meets the additional claim limitations, as follows:

The fingerprint imager of Claim 1 wherein the imaging array (i.e. 100) is separate from the navigation array (i.e. 101) *[fig. 3a]*.

Regarding claim 5, Borza meets the additional claim limitations, as follows:

The fingerprint imager of Claim 1 wherein the plurality of sensors of the imaging array is one of resistive-type sensors, capacitive type sensors, and optical-type sensors *[abstract; col. 3, ll. 21-23: capacitive-type]*; and wherein the plurality of sensors of the navigation array is one of resistive-type sensors, capacitive type sensors, and optical type sensors *[abstract; col. 3, ll. 21-23: capacitive-type]*.

Regarding claim 6, Bohn meets the additional claim limitations, as follows:

The fingerprint imager of Claim 1 wherein the fingerprint imager includes a surface along which a finger is moved and wherein the fingerprint imager is implemented in

Art Unit: 2624

a stand-alone unit comprising: a) optics for focusing light onto the surface [*Column 10, Lines 62-64*]; and b) optics assembly for housing the optics [*100 on Figure 1*].

Regarding claim 7, all claimed limitations are set forth and rejected as per discussion for claim 6.

Regarding claim 9, Borza meets the additional claim limitations, as follows:

The fingerprint imager of Claim 1 wherein the fingerprint imager includes a surface along which a finger is moved (i.e. swept) and wherein the surface is one of a physical surface and an optical imaging plane [*abstract; col. 3, ll. 21-23: physical surface*].

Regarding claim 10, Borza meets the additional claim limitations, as follows:

The fingerprint imager of Claim 1 wherein the pixel size of the sensors of the imaging array is different from the pixel size of the sensors in the navigation array [*col. 6, ll. 50-60*].

Regarding claim 11, Borza and Bohn do not explicitly disclose the following claim limitations:

The fingerprint imager of Claim 10 wherein the pixel size of the sensors of the imaging array has the dimensions of about 50 microns by about 50 microns and the pixel size of the sensors of the navigation array has the dimensions of about 20 microns by about 20 microns.

Art Unit: 2624

At the time of the invention, it would have been obvious (as a matter of *design choice*) to a person of ordinary skill in the art to achieve finer precision in the sub-image rather than the navigational images and set the imaging array to 50x50 microns and navigational array at 20x20 microns. Applicant(s) has not disclosed that the specific dimensions recited provides an advantage, is used for a particular purpose or solves a stated problem.

Regarding claim 12, Borza and Bohn do not explicitly disclose the following claim limitations:

The fingerprint imager of Claim 1 wherein the resolution of the sensor of the imaging array and the sensors of the navigation array is about 500 dots per inch. At the time of the invention, it would have been obvious (as a matter of *design choice*) to a person of ordinary skill in the art to use 500 dpi sensor, in order to have quality images. Applicant(s) has not disclosed that 500 dpi recited provides an advantage, is used for a particular purpose or solves a stated problem.

Regarding claim 13, Borza meets the additional claim limitations, as follows:

The fingerprint imager of Claim 1 wherein the fingerprint imager is implemented in a stand-alone unit and wherein the fingerprint imager further comprises: a) a capacitive sensor having a surface along which a finger is moved [*abstract; col. 3, ll. 21-23; capacitive-type*]; and b) an assembly for housing (i.e. chip) the capacitive sensor [*col. 6, ll. 23-26*].

Regarding claim 14, all claimed limitations are set forth and rejected as per discussion for claim 13.

Regarding claim 15, Borza and Bohn meet the additional claim limitations, as follows:

The fingerprint imager of Claim 1 further comprising: a) an imaging array strobe generator for employing the change in position to selectively control when the imaging array captures the sub-images [*Bohn col. 13, ll. 45-50*]; and b) a processor (i.e. 150) [*Bohn col. 13, ll. 65-67*]; c) a composite image generation software which when executing on the processor receives the sub-images and the movement information for each sub-image relative to a previous sub-image and based thereon generates a composite image of the fingerprint [*Bohn col. 14, ll. 1-6*]; and d) an identification software which when executing on the processor receives the composite image of the fingerprint, analyzes the composite image to generate minutia, and compares the generated minutia to previously stored minutia [*Borza: col. 7, ll. 1-5; This is a notoriously well-known use of a fingerprint, see Raynal US 6,643,389, Official Notice*], and grants access to a resource if the generated minutia matches one of the previously stored minutia [*This is a notoriously well-known use of a fingerprint, see Raynal US 6,643,389, Official Notice*].

Regarding claim 17, Bohn meets the additional claim limitations, as follows:

The fingerprint imager of Claim 1 wherein the imaging array is a 1 by N (i.e. linear array) sensor array (i.e. 120) [*col. 4, ll. 37-46*].

Regarding claim 18, Bohn meets the additional claim limitations, as follows:

Art Unit: 2624

The fingerprint imager of Claim 1 wherein the navigation array (i.e. 130) is a P by Q (i.e. two-dimensional array) sensor array [col. 4, ll. 37-46].

Regarding claims 22-24 all claimed limitations are set forth and rejected as per discussion for claims 1, 3 and 15

[5] Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borza [US 6,333,989] in view of Bohn et al. ("Bohn") [US 6,207,945] further in view of Akizuki [US 6,360,004].

Regarding claim 8, Borza and Bohn disclose the claim limitations as set forth in claim 7.

Borza and Bohn do not explicitly disclose the following claim limitations:

The fingerprint imager of Claim 7 wherein the PC peripheral device is one of a cursor pointing device and a keyboard.

However, in the same field of endeavor Akizuki discloses the deficient claim limitations, as follows:

The fingerprint imager of Claim 7 wherein the PC peripheral device is one of a cursor pointing device (i.e. 4) and a keyboard [fig. 1: touch pad].

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Borza and Bohn with Akizuki to implement the fingerprint imager on a touch pad, the motivation being to provide dual functionality [col. 2, ll. 12-16].

Regarding claim 16, Borza and Bohn disclose the following claim limitations:

Art Unit: 2624

The fingerprint imager of Claim 1 further comprising: a) a processor (i.e. 16) [*Borza: col. 6, ll. 65-67*]; and

Borza and Bohn do not explicitly disclose the following claim limitations:

b) a cursor control software which when executing on the processor receives the movement information of the fingerprint along at least one of the x-axis and the y-axis from the navigation circuit and uses the movement information to control the cursor.

However, in the same field of endeavor Akizuki discloses the deficient claim limitations, as follows:

b) a cursor control software which when executing on the processor receives the movement information of the fingerprint along at least one of the x-axis and the y-axis from the navigation circuit and uses the movement information to control a cursor. [*col. 3, ll. 47-51; col. 4, ll. 24-32*].

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Borza and Bohn with Akizuki to implement the fingerprint imager on a touch pad, the motivation being to provide dual functionality [*col. 2, ll. 12-16*].

Contact Information

[6] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-7455. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

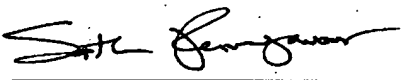
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Matthew C. Bella whose telephone number is (571) 272-7778, can be reached on Monday to

Art Unit: 2624

Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

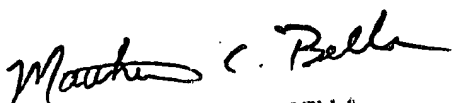
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dated: January 29, 2007

By: 

Sath V. Perungavoor
Telephone: (571) 272-7455

For: Matthew C. Bella



MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600